CLAIMS

1. An energy absorber for absorbing energy of a vehicle or component of a vehicle or occupant of the vehicle in a crash situation so as to allow relatively gradual deceleration of the vehicle, component or occupant, the energy absorber including a first part, a second part and an elongate deformable member secured to the first part and extending through a deforming arrangement carried by the second part, whereby said elongate deformable member normally acts as a tie or strut between said first part and said second part but wherein the arrangement is such that, when the force acting between said first part and second part in a predetermined direction exceeds a predetermined amount, said elongate deformable member is thereby forced progressively through said deforming arrangement as the distance between said first part and said second part changes and the deformable member is thereby forced to undergo plastic deformation, whereby energy is absorbed, and wherein said deforming arrangement is such as to effect such plastic deformation substantially without changing the material cross sectional area of the deformable member.

2. An energy absorber according to claim 1 wherein said deforming arrangement is so configured as to flatten said deformable member whilst allowing it to increase in dimension along a cross-sectional direction perpendicular to that in which its cross-sectional dimension is reduced by said flattening.

3. An energy absorber according to claim 1 or claim 2 wherein said deforming arrangement includes at least one roller, bearing on said elongate deformable member and rotatable about an axis transverse to the direction of

elongation of the deformable member, and further includes an opposing member and wherein a flattened portion of said elongate deformable member extends between said roller and said opposing member.

4. An energy absorber according to claim 1 or claim 2 wherein said deforming arrangement includes a pair of rollers rotatable about respective axes transverse to the direction of elongation of the deformable member and wherein a flattened portion of said elongate deformable member extends between said rollers.

5. An energy absorber according to claim 3 wherein the spacing of said roller from said opposing member is adjustable to adjust the extent to which the elongate member is flattened in passing through said deforming arrangement and thus to adjust the rate of energy absorption in operation.

6. An energy absorber according to claim 4 wherein the spacing between said rollers is adjustable to adjust the extent to which the elongate member is flattened passing through said deforming arrangement and thus to adjust the rate of energy absorption in operation.

7. An energy absorber according to any preceding claim wherein said elongate deformable member is a metal tube.

8. A vehicle seat assembly including a seat mounting secured to or securable to, structure of the vehicle, a seat proper including one or more body supporting parts, the seat proper being mounted for guided movement relative to said structure and at least one energy absorber according to any of claims 1 to 7 having said first part thereof connected to one of said seat mounting and seat proper and having said second part connected to the other of said seat

mounting and said seat proper, whereby the energy absorber normally restrains movement of the seat proper relative to the seat mounting but, in a crash situation, can allow controlled movement of the seat proper relative to the seat mounting, whilst absorbing energy as the elongate deformable member is forced through the deforming arrangement or as the deforming arrangement is forced along the elongate deformable member.

9. An energy absorber according to claim 2 wherein said deforming means comprises a die defining an orifice through which said deformable member extends, the orifice including opposing flanks facing respective sides of the elongate deformable member, the deformable member including a part which is flattened or otherwise of reduced dimension to fit between said opposing flanks and an adjoining part of a dimension in the direction in which said flanks are spaced apart, which is greater than the spacing between said flanks, the dimension of said orifice measured transversely perpendicular to spacing between said flanks being greater than the greatest transverse dimension of the tube after the latter has passed through said orifice.

10. An energy absorber according to claim 1 and substantially as hereinbefore described with reference to and as shown in the accompanying drawings.